

# What's Next?

## - Prospects of the U.S.-Japan Security Alliance -

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### **Abstract**

In this paper, I will analyze the prospects of the U.S. and Japan security alliance using a formal model. I argue that both exogenous and endogenous factors, such as the balance of power shift in East Asia and the recent political extremism in the United States, affect the outlook of the security alliance. Therefore, I will employ two independent variables: the U.S.' interest to cooperate with Japan and China's relative power, and investigate how these variables shape the bargaining between U.S. and Japan. What are the sufficient conditions to maintain a credible alliance? Under what conditions the security alliance will be dissolved? My research found that the U.S.' strong interest to cooperate, which is determined by U.S.' political climate, will be a necessary condition to maintain a credible alliance. Furthermore, a rising China undermines the continuation of an effective alliance, especially when the U.S.' interest to cooperate with Japan is low. In addition, the game model also examines the likelihood of Japan's nuclearization, which I argue is Japan's only outside option.

Word Count:

# Introduction

The major objective of this paper is to analyze the prospects of the U.S. and Japan security alliance using a formal model. I argue that both exogenous and endogenous factors determine the outlook of the security alliance. In particular, I will focus on two independent variables: China's relative power, and the U.S.' interest to cooperate with Japan, which I believe is affected by the U.S.' political climate. I will explore how these variables shape the bargaining between U.S. and Japan, and what are the sufficient conditions for the continuation of an effective alliance.

Domestic political climate often affects international affairs. As for the U.S.-Japan security alliance, I believe that America's political climate weighs more than Japan's mainly for two reasons. Firstly, there is a huge gap between these nations' bargaining abilities as Japan is completely dependent on the U.S. for its own national defense. Therefore, Japan's interest in maintaining the security alliance must be greater compared to the U.S. Secondly, the political climate in the United States is far more unpredictable compared to Japan's. Especially, I argue that declining U.S. hegemony has further destabilized the nation's political environment, and the instability is reflected by recent political extremism of both political right and left. The policy of isolationism, which is characterized as a "far-right" ideology, will discourage global-level security and economic cooperation. On the other hand, "far-left" politicians often oppose the expansion of defense and military budgets due to their priority of more domestic issues, such as social welfare. It will also be debatable how firmly they contain communist China.

Hence, I argue that political extremism in the United States, either right or left, will decrease the likelihood of an effective alliance. A rising China is another critical factor. The game model indicates that if China's relative power reaches a certain extent, cooperation between the U.S. and Japan will become more challenging. In addition, the game model also addresses the outlook of Japan's nuclearization, which is one of

the central issues related to the alliance literature. Nuclearization seems Japan's only available outside option, and the model indicates that Japan's preference for the nuclear option increases as China's threat escalates.

## **Substantive Background and Literature Review**

East Asia has been a focus of security studies for the last few decades. Many scholars and analysts argue that East Asia is the center of international instability in the twenty-first century (Christensen, 1999), and some scholars believe that the region shows a picture of a more classic realist politics (Jepperson, Wendt, and Katzenstein, 1996). The region's multipolarity and the presence of powerful non-democratic actors construct a highly volatile environment. The historical antipathy between key East Asian nations makes cooperation more challenging as well. Furthermore, most importantly, along with the decline of U.S. hegemony, China has been implementing aggressive foreign policies that spur to expand its political and economic leverages. Considering the failure of the Obama Administration's pivot to Asia policy and the pending trade war with China, it is uncertain how long the United States can reign as a "world's policeman" as its hegemony is gradually being a relic of the past.

As the international balance of power is shifting, the outlook of the U.S.-Japan security alliance is more unpredictable than ever. Despite its more than 70-year history, the United States and Japan both have expressed their frustrations and concerns. Many U.S. government officials and scholars still seem to believe that the security cooperation with Japan is a cornerstone of the U.S. foreign policy in Asia. It is commonly believed that the alliance plays a pivotal role to maintain the regional stability because it can strengthen the U.S. influence and constrain communist forces in East Asia. Christensen (1999), for example, claims that the security alliance can reduce the level of security dilemma in East

Asia. Nevertheless, the U.S. government has also been pointing out the disparity in the alliance and demanding more burden-sharing from Japan. For instance, even though this request was a part of their bargaining strategy, the Trump Administration has requested Japan to increase the Omoiyari Yosan, the funds Japan pays to support the U.S. forces stationed in Japan, to 8 billion dollars per year, which is 4 times more than the current payment.

Although the alliance with the United States is always a foundation of Japanese foreign policy, its credibility has often been questioned in the past few decades. For example, during the period known as "Japan bashing" in the 80s, a strong anti-Japanese sentiment was present in the U.S. as a consequence of the trade war with Japan. The Clinton Administration's indifference to Japan due to China's rapid economic development is called "Japan passing." And finally, there is "Japan nothing" since 2010 as a response to the economic power shift between China and Japan. All of them generate a fundamental question: will the United States defend Japan from China in the name of the security alliance? Especially in recent years, Japan further escalates its security concern not only because of the ongoing Senkaku/Diaoyu Islands dispute but also because of China's recent aggression against Hong Kong and Taiwan. In particular, the U.S.' weak stance on China during the Obama Administration raised serious discussions in the Japanese government and among the public.

Although he faced strong domestic oppositions, former Japanese Prime Minister Abe set military normalization as one of his primary agendas in response to the pressure from the U.S. security sectors and China's rising threat. The military normalization policy is well-depicted by Abe's proposal to reinterpret Article 9 and allow the Japan Self-Defense Forces to fully exercise the right of collective self-defense. Japan's normalization policy has been quite controversial. Some scholars (i.e. Fatton, 2018) claim that Japan is seeking a greater autonomy from the U.S. because of the unprecedented uncertainty about the U.S.' security commitment to Japan. On the other hand, other scholars (i.e.

Richardson, 2020; Hughes C, 2017; Hughes C, 2018) argue that Japan's main objective is to reinforce the security alliance with the U.S., which they believe is still a priority of Japanese policymakers. As Hagström and Hanssen (2016) claim, I believe that these two different arguments are not necessarily mutually exclusive. Also, no straightforward answer is currently available as even Japanese policymakers themselves do not seem to have a clear answer at this point. We cannot predict Japan's strategic policy only based on Japan's interests and preferences. Instead, it should be examined in the interaction with other important elements, including the U.S.' interest and Chinese power.

The U.S.-Japan security alliance is, needless to say, a bilateral alliance. That means both parties must share the common interest; otherwise, it may get terminated. The cost of maintaining the alliance is subjective, because the U.S. with a strong interest to cooperate will find the cost much cheaper compared to the U.S. with a low interest. At the same time, its declining relative power should make it more expensive for the U.S. to provide Japan with security. In fact, the Japanese security policy is bizarre; Japan relies its national defense on the United States to the extent that its survival is severely questioned without this single alliance. Without a doubt, Japan's preference is to maintain the status quo by continuing an effective alliance with the U.S. Hughes C (2009) argues that Japan will first seek to strengthen the alliance, but if it found that the alliance does not satisfy its interest, then Japan will activate its own military power. Thus, I believe that the U.S.' interest should be a central focus of the analysis, not Japan's. In addition, considering their asymmetric defense power and different levels of threats they face as a consequence of a rising China, the U.S.' interest to cooperate will never exceed Japan's, even if the U.S. is interested enough to maintain the alliance.

Japan's post-World War II pacifist ideology as well as the likelihood of nuclearization are crucial subjects in the alliance literature. There is a divergence of opinion on whether Japan will choose a nuclear path when the alliance is no longer promising. Some scholars (Kamiya, 2002) argue that Japan will never become a nuclear power due to its pacifist

ideology, while others (Machida, 2012) claim that the ethnocentric ideology emerging among Japanese citizens encourages the nation's nuclear armament. Jepperson, Wendt, and Katzenstein (1996) state that the combined legacies of Japanese nationalism and pacifism are likely to produce new political constellations and policies that will resist analytical capture by ahistorical conceptions of a "normal" Japan.

I argue that we cannot analyze the outlook of Japan's nuclearization by simply focusing on Japan's interest and ideology. First of all, nuclearization has never been Japan's policy preference. The external threat environment surrounding the post-World War II Japan was relatively calm before China's rise; and therefore, the security alliance with the U.S. was always satisfactory. There is a strong consensus that Japan will not pursue the nuclear option as long as an effective alliance is maintained. (Chanlett-Avery and Nikitin, 2009) Under the nuclear deterrence offered by the United States, Japan finds the costs of nuclearization outweighing any security benefit. (Hughes L, 2007) In other words, what mainly determines the likelihood of Japan's nuclearization is the U.S.' interest to maintain an effective alliance, not Japan's.

Although ideology is an important component of policy-making processes, we must explore where the ideology comes from. Ideology is not a strategic policy; instead, ideology is a tool to explain a specific policy outcome. In the case of post-World War II Japan, for example, where its pacifism is originated, and what is the reason behind that the nation's ideology is gradually shifting from pacifism to nationalism? For instance, Horiuchi (2014) argues that increasing nationalism among the Japanese public does not immediately bring militarism; however, such a sentiment is especially evident with respect to China. Japanese nationalism is gradually arose by escalating exogenous threats and political tensions, which are represented by Japan's recent island disputes against China, for example. The statistical result provided by Machida (2012) also indicates that not only an emerging ethnocentrism but also the threat perception of China increases Japanese citizens' support for nuclear armament. Therefore, I argue that the emphasis of

Japan's militarization and nuclearization discourses must be shifted from "either Japan wants or does not want," which is a unilateral approach just focusing on Japan's interest and ideology, to "either Japan can afford or cannot afford," which is a comprehensive analysis examining the interaction between Japan and other major actors, the United States and China, in terms of their interests and capabilities.

Some scholars (Oro, 2015; Berger, 1993) claim that pacifism is an ideology strongly rooted in post-World War II Japan; and therefore, Japan will not choose a militarization path. Nevertheless, ideology is not a strategy, and it is not immutable either. For instance, Saltzman (2015) believes that Japan will eventually "normalize" its security policy due to the increasing security dilemma in the region. His argument is supported by the Abe Administration's implementation of "proactive pacifism" (*sekkyokuteki heiwashugi*), which is "alleged to herald a new era in which Japan's contribution to international peace and security will be commensurate with its economic power." (Gustafsson, Hagström, and Hanssen, 2018, 137) His proactive-pacifist policies include the reinterpretation of Article 9, balancing against China, and the expansion of defense budget. On the other hand, the conventional idea of pacifism is defined that it "denies any meaningful role for the military and the use of force as a means to pursue a state's national interests." (Izumikawa, 2010, 129) This definition implies that peace is maintained only when there is no external threat. Ironically, even though it is Japan's best interest to maintain the status quo, Japan cannot make any contribution as long as it keeps its pacifist ideology. Some scholars criticize Japan's military normalization process that it escalates the regional tension; however, its objective is to maintain peace by balancing. As Hagström and Hanssen (2016) argue that Japan's emerging normalization aims to achieve peace through 'active measures.'

However, some scholars express concerns about Japan's proactive pacifist ideology, which is believed to be inherited by the Suga Administration launched in 2020. Oro (2015) argues that the ideology creates a security dilemma in East Asia. In addition, Gustafsson, Hagström, and Hanssen (2018, 152) also criticize proactive pacifism that "this

could potentially lead to an increase in antagonistic sentiments towards those deemed unpeaceful, so that proactive pacifism legitimises not only a tougher military posture, but possibly also pre-emptive moves.” These criticisms seem to ignore the reality that Japanese security in post-World War II has been defended by the U.S.’ nuclear power. Satake (2009) explains Japan’s anti-nuclear sentiment and its reliance on the U.S. nuclear umbrella, which he calls the “nuclear dilemma,” are the incompatible factors. Pacifism does not have the capability to protect the nation from foreign aggression. Japan’s pacifism couldn’t have existed until today without a balancing strategy provided by the U.S. nuclear forces.

I believe we need a more comprehensive approach to investigate Japan’s future defense policy, the likelihood of nuclearization, and the prospects of the U.S. and Japan security alliance. Most of the existing literature simply examine these issues by simply focusing on Japan’s interests and ideology. However, due to the U.S. and Japan’s asymmetric power, I believe this unilateral approach is insufficient. Instead, we must analyze the strategic interactions of all the nations that have significant impact on the alliance, such as the U.S. and China. Some scholars (Pugliesea and Patalanob, 2020) indeed claim that Abe’s strategic defense policy is the response to an assertive China and a more volatile America. And yet, there is currently no sufficient research that systematically studies the alliance based on the strategic interests of the U.S. and Japan, and the influence of a rising China. In addition, no enough research has been conducted on under what condition Japan’s nuclearization could occur. A majority of the studies address whether of not Japan will become nuclearized; however, our focus must be shifted from *if* to *when* nuclearization could occur, because Japan cannot control either the U.S.’ interest and China’s assertiveness. This will be the first research to explore the prospects of the U.S.-Japan security alliance with a formal model, which comprehensively analyzes the U.S.’ interest, China’s relative power, and the likelihood of Japan’s nuclearization.



# Theory

I decided to use a formal model for multiple reasons. Firstly, my objective is to examine the strategic behavior of the United States and Japan, and how their optimal strategies are altered by the two variables: U.S. domestic political climate and China's relative power. The game model allows to investigate the impact of these variables while holding the other elements equal. Secondly, even though the concerns about the credibility of future alliance are escalating, there are currently no sufficient literature which investigate the prospects of the U.S.-Japan alliance using some game models, particularly that address the these independent variables. In addition, a formal model allows to observe dynamics that could be counter-intuitive and could be missed in a qualitative analysis. Last but not least, we can thoroughly investigate the players' outside options by using a formal model. U.S. and Japan's outside options also affect their bargaining strategies, since bigger outside options offer a bargaining advantage, and vice versa. In this case, the U.S. has much better outside options compared to Japan, and it incentivizes the nation's already superior negotiation power. In contrast, Japan's smaller outside option is another element further weakening its bargaining ability alongside the nation's defense vulnerability.

The U.S. outside options will include the cooperation with its other allies, such as EU, as long as the nation is still interested in the global cooperation to contain China. Isolationism will be another outside option of the U.S. when security cooperation is no longer its policy interest. On the other hand, considering its geographic vulnerability, nuclearization seems to be the only outside option for Japan to ensure its security in a long term perspective without the alliance. In spite of some strong oppositions, the debate over nuclearization has been more present in Japan, especially since the U.S. hegemony started declining. Formal model reveals under what conditions the U.S. and Japan will choose their outside options over the security alliance, and how likely the situations will be.

## Setup

In this model (see Figure 1), I study the strategic alliance between the United States ( $U$ ) and Japan ( $J$ ). Historically speaking, Japan is always more interested in the security cooperation with the U.S. due to its defense vulnerability. While Japan is desperate to maintain the status quo, the United States has been demanding more burden sharing from Japan. Considering their different perspectives, the U.S. should move first and then Japan responds. In addition, in order to investigate one of the variables, U.S. domestic political climate, I set Nature ( $N$ ) taking the first move to determine whether the U.S. has a high ( $h$ ) or low ( $l$ ) interest in cooperating with Japan. Specifically, Nature selects a low-interest US ( $U_L$ ), which means political extremism is present in the U.S., with probability ( $p$ ), and a high-interest US ( $U_H$ ), which indicates U.S. political stability, with probability ( $1 - p$ ). Since we don't know the probability of Nature selecting ( $p$ ), it will be drawn from a Beta distribution.<sup>1</sup>

While the U.S. knows its own type, Japan does not. After the move of Nature, the U.S. decides whether to propose a high ( $h$ ) or low ( $l$ ) contribution to the alliance. The contribution includes both monetary spending and manpower. I assume that  $U_L$  will not have any reason to offer a generous contribution, and therefore, that option is not present in this game. Thus, only  $U_H$  will potentially play  $h$ . After the first move of the U.S., Japan also decides whether to offer a generous contribution ( $h$ ) or propose a small contribution ( $l$ ). Then, the U.S. chooses whether to accept ( $A$ ) or reject ( $\neg A$ ) Japan's proposal. Reject results in the dissolution of the security alliance, and both players receive a payoff of their outside options, which are represented as  $\beta_U$  and  $\beta_J$ .

For instance, if  $U_H$  and Japan both play  $h$ , and  $U_H$  accepts, the U.S. and Japan receive a payoff of  $x_6$  and  $y_6$ , respectively. On the other hand, when  $U_H$  plays  $h$  and Japan plays  $l$ , and  $U_H$  accepts, the U.S. receives  $x_5$  and Japan receives  $y_5$ . Since both  $U_H$  and  $U_L$

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<sup>1</sup>Shaw Lu, "Visualizing Beta Distribution and Bayesian Updating," April 1 2019, <https://towardsdatascience.com/visualizing-beta-distribution-7391c18031f1>

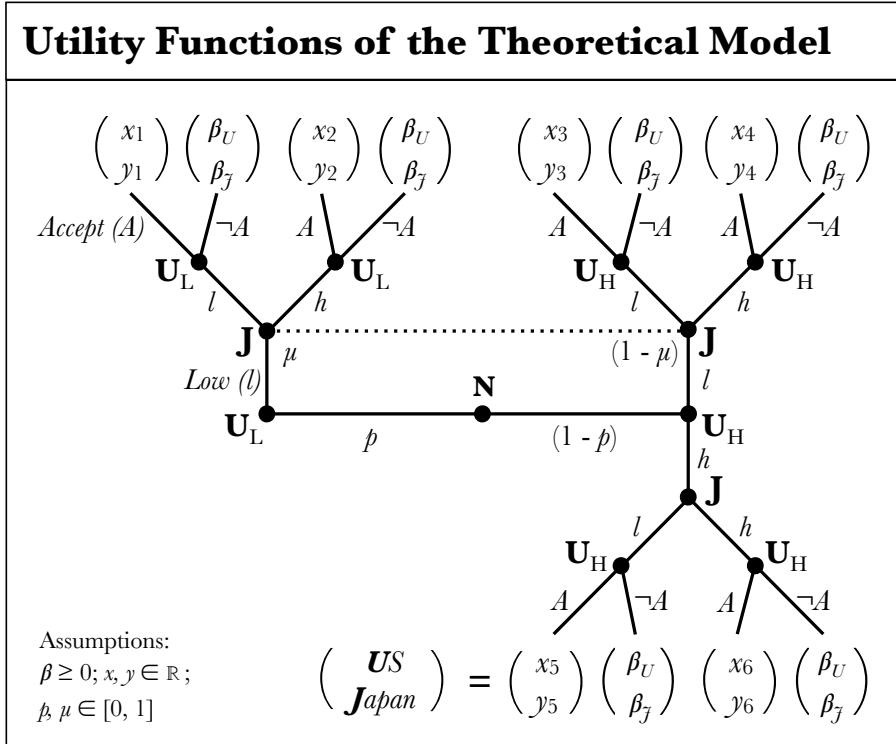


Figure 1: Japan-US Alliance Game. To begin the game, Nature ( $N$ ) selects the probability ( $p$ ) that the U.S. will have a low interest in maintaining the alliance with Japan ( $U_L$ ) (e.g., because of an extreme domestic political climate), and the probability ( $1 - p$ ) that the U.S. will have a high interest ( $U_H$ ). The U.S. then selects whether to invest a high amount in the alliance ( $h$ ), or to invest a low amount ( $l$ ). The U.S. knows its own type but Japan does not. Thus, when either type of the U.S. plays  $l$ , Japan faces an information set. Given Japan's belief ( $\mu$ ) about the U.S. type, Japan also chooses whether to contribute a high ( $h$ ) or low ( $l$ ) amount. Finally, the U.S. observes Japan's move, and then decides whether to accept Japan's proposal ( $A$ ) or reject it ( $\neg A$ ).

could possibly play  $l$ , Japan will face an information set if the U.S. plays  $l$ ; Japan will not know if the  $l$  is being played by a high- or low-interest US. Thus, consequently, Japan will decide whether to play  $l$  or  $h$  based on the belief  $\mu$  (where  $\mu \in [0, 1]$ ) that the U.S. is  $U_L$ , or  $(1 - \mu)$  that the U.S. is  $U_H$ . For example, if  $U_L$  and Japan both play  $l$ , and  $U_L$  accepts, they receive  $x_1$  and  $y_1$ , respectively. Also, if  $U_H$  plays  $l$  and Japan plays  $h$ , and  $U_H$  accepts, the U.S.  $x_4$  and Japan receives  $y_4$ . Figure 1 depicts this game.

## Assumptions

The influence of U.S. domestic political climate can be analyzed by different U.S. types,  $U_H$  and  $U_L$ . In order to examine the other variable, China's relative power, I will investigate two different circumstances using the same game settings: when China's relative power is high ( $C_H$ ) and low ( $C_L$ ). The full preference orderings of the U.S. and Japan in each  $C_H$  and  $C_L$  are introduced in Figure 2

For both  $C_H$  and  $C_L$  cases, I assume that  $U_H$  is a more preferable type over  $U_L$  for both players, since the U.S. with a higher interest in cooperation must generate a greater mutual payoff compared to the U.S. with a lower interest, *ceteris paribus*. For example, a set of payoffs ( $x_3$  and  $y_3$ ) should be more optimal than ( $x_1$  and  $y_1$ ), and a set of ( $x_4$  and  $y_4$ ) is more optimal than ( $x_2$  and  $y_2$ ) for both the U.S. and Japan, either in  $C_H$  or  $C_L$  case. In addition, *ceteris paribus*, mutually high contribution should be more optimal than mutually less contribution as the former provides greater payoffs to both, regardless of  $C_H$  or  $C_L$ . Hence, the U.S. and Japan both prefer a set of ( $x_6$  and  $y_6$ ) over ( $x_3$  and  $y_3$ ).

In the case of  $C_L$ , the most preferable situation for both must be to offer a low contribution while the other player offers a high contribution. The second most preferable scenario is a mutually high contribution, followed by a mutually less contribution. The least preferable situation for both is to offer a contribution while the other player make a low contribution. In short, in the  $C_L$  case, preference orderings of both players will meet all traditional bargaining conditions. The only difference between their preferences is how they rank their outside options. Under  $C_L$ , the U.S. prefers its outside option  $\beta_U$  over the worst bargaining outcome, which is that it plays  $h$  while Japan plays  $l$ . On the other hand,  $\beta_J$  will be absolutely the least desirable option for Japan. In the case of  $C_L$ , Japan will even prefer the situation that it contributes more than the U.S. over its outside option, regardless of U.S. type.

Without the alliance with the United States, nuclearization currently seems Japan's

only outside option to ensure its survival in volatile East Asia. However, Japan will face some serious obstacles to nuclearize itself. Pacifism is strongly rooted in Japan since the end of WWII; and therefore, Japanese politicians are extremely hesitant to propose a nuclearization policy due to the fear of not getting re-elected. Japan's nuclearization will be exposed to biting criticism from the international community, which deeply concerns the resurgence of Japan's militarism and the collapse of balance of power in East Asia. Thus, as long as China's relative power is still lower, it is implausible that Japan chooses its outside option over the security alliance with the U.S. Even when  $U_L$  and Japan both play  $l$ , which means the credibility of the alliance is at its lowest, continuation of the alliance still will be more favorable for Japan. On the other hand, the U.S. will suffer much less criticisms from home and abroad if it abandons the alliance with Japan and pursues one of its outside options.

Regarding the U.S. preference orderings, how it ranks its outside options will be the only difference between the  $C_H$  and  $C_L$  cases. The U.S. will find  $\beta_U$  much more favorable as China's relative power increases. In the  $C_L$  case,  $x_5$ , which is the payoff the U.S. receives when  $U_H$  plays  $h$  and Japan plays  $l$ , will be the only less desirable option over  $\beta_U$  for the U.S. However, in  $C_H$ , the U.S. must prefer  $\beta_U$  not only over  $x_5$  but also over  $x_3$  and  $x_1$ , the payoffs from mutually less contributions. In order to defend itself from a powerful China, the U.S. will value its outside options more than a less-credible security alliance with Japan. In other words, when China's threat is high, the U.S., either  $U_H$  and  $U_L$ , will abandon the security alliance as long as Japan does not contribute enough.

In contrast, we will see more substantial changes by comparing Japan's preference orderings of the  $C_H$  and  $C_L$  cases. Japan's priority will shift from gambling to ensuring its security as China's relative power and threat escalate. In the  $C_H$  case, mutually less contribution will be least favorable for Japan regardless of the U.S. type. Japan will rather prefer to lose the gamble against the U.S. and play  $h$  while the U.S. plays  $l$  in order to boost up the credibility of the alliance and strengthen its defense ability. Hence,

Japan's preference ordering no longer matches the traditional bargaining condition in the  $C_H$  case.

Another significant difference is that Japan's outside option will become more plausible as China's threat increases. Since nuclearization will provide the ultimate security, Japan will choose  $\beta_J$  over  $y_3$  and  $y_1$ , which are the payoffs Japan receive from mutually less contributions in the case of  $U_H$  and  $U_L$ , respectively. Japan also will prefer  $\beta_J$  over  $y_2$  that is when Japan plays  $h$  while  $U_L$  plays  $l$ . I argue that even though the U.S. plays  $l$ , Japan will still accept playing  $h$  as long as the U.S. type is  $U_H$ , since it means that the U.S. is at least highly interested in maintaining the alliance.

Nevertheless, as a rational actor, Japan will avoid risking its security by cooperating with  $U_L$  when China's relative power hits to a certain extent. In spite of the obstacles, Japan will rather pursue its nuclearization policy if the U.S. does not demonstrate a strong interest in the security cooperation. From Japan's perspective, continuation of the alliance with  $U_L$  must be much less credible compared to the alliance with  $U_H$ , even if they play the same strategy. Hence, U.S. type will have a significant influence on Japan's preference ordering in the case of  $C_H$ .

<b>Preference Orderings of Players when China's Relative Power is Low (<math>C_L</math>)</b>			
<b>U.S.</b>	$x_4 > x_2 > x_6 > x_3 > x_1 > \beta_U > x_5$	<b>Japan</b>	$y_5 > y_6 > y_3 > y_1 > y_4 > y_2 > \beta_J$
<b>Preference Orderings of Players when China's Relative Power is High (<math>C_H</math>)</b>			
<b>U.S.</b>	$x_4 > x_2 > x_6 > \beta_U > x_3 > x_1 > x_5$	<b>Japan</b>	$y_5 > y_6 > y_4 > \beta_J > y_2 > y_3 > y_1$

Figure 2: Preference orderings of the U.S. and Japan when China's relative power is low ( $C_L$ ) and high ( $C_H$ )

## Solution

Given the preference ordering, I proceed to solve the game.

### *China with Low Power*

First, we begin with the ‘China low power’ ( $C_L$ ) case. Using backwards induction, it is straightforward to see that a unique Bayesian perfect Nash equilibrium (BPNE) exists, which is a separating equilibrium. As for  $U_L$ , it always plays  $l$  and also given the preference ordering  $x_1 > \beta_U$  and  $x_2 > \beta_U$ , it always plays  $A$ . Since  $y_2 > y_1$ , Japan plays  $l$  when the U.S. is  $U_L$ .

To find the optimal strategy of  $U_H$ , let’s assume  $U_H$  plays  $l$ . Given  $x_3 > \beta_U$  and  $x_4 > \beta_U$ ,  $U_H$  always plays  $A$ , and given  $y_3 > y_4$ , Japan plays  $l$ . Thus, if  $U_H$  plays  $l$ , the payoff will be  $x_3$ . To see if there is a profitable deviation, now let us assume that  $U_H$  plays  $h$ . Given  $x_5 < \beta_U$  and  $x_6 > \beta_U$ , it plays  $\neg A$  if Japan plays  $l$ . However, given  $y_6 > \beta_J$ , Japan plays  $h$  with  $U_H$  accepts, which gives  $U_H$  a payoff of  $x_6$ . Given  $x_6 > x_3$ , it is optimal for  $U_H$  to play  $h$ . In summary,  $U_L$  always plays  $l$  and  $A$ , while  $U_H$  always plays  $h$  and  $A$ . Japan plays  $l$  if the U.S. plays  $l$  and  $h$  if the U.S. plays  $h$ , which a belief,  $\mu$ , consistent with Bayes’ law:  $\mu \equiv p(U_L|l) = \frac{p(l|U_L)p(U_L)}{p(l|U_L)p(U_L)+p(l|U_H)p(U_H)} = \frac{1 \cdot p}{1 \cdot p + 0 \cdot (1-p)} = 1$ . Thus, in this game, the only equilibrium results in cooperation: they will maintain a mutually-low contribution alliance when the U.S. is  $U_L$  or they will enter a mutually-high contribution alliance when the U.S. is  $U_H$ .

### *China with High Power*

Now, let us examine Bayesian perfect Nash equilibria with the ‘China high power’ case. While there is a unique BPNE for the ‘China low power’ case, there are two BPNEs for the  $C_H$  case: a separating equilibrium and a pooling equilibrium. As for  $U_L$ , given  $x_1 < \beta_U$  and  $x_2 > \beta_U$ ,  $U_L$  plays  $A$  if Japan plays  $h$  but plays  $\neg A$  if Japan plays  $l$ . At the

same time, given  $x_3 < \beta_U$  and  $x_4 > \beta_U$ , and  $x_5 < \beta_U$  and  $x_6 > \beta_U$ ,  $U_H$  always agrees to maintain the alliance (playing  $A$ ) as long as Japan plays  $h$ , but chooses to abandon the alliance (playing  $\neg A$ ) if Japan plays  $l$ .

As for Japan, given  $\beta_J > y_2$ , it is optimal to play  $l$  if the U.S. is  $U_L$ , while playing  $h$  is more optimal in the case of  $U_H$  given  $\beta_J < y_4$ . However, since Japan doesn't know the U.S. type, it has to choose its strategy based on the value of  $p$ , which is represented as

$$p \geq \frac{y_4 - \beta_J}{y_4 - y_2} \quad (1)$$

When this condition 1 is satisfied (see Appendix for proof), Japan will play  $l$  when the U.S. plays  $l$ . Hence, in this case,  $U_L$  and  $U_H$  will both receive  $\beta_U$ . On the other hand, if the U.S. ( $U_H$ ) plays  $h$ , Japan will play  $h$  based on  $\beta_J < y_6$ , and therefore,  $U_H$  will receive  $x_6$ . In this situation, given  $x_6 > \beta_U$ , it is optimal for  $U_H$  to play  $h$  and  $A$ .

Hence, there will be a separating equilibrium when condition 1 is satisfied, such that  $U_L$  will play  $l$  and  $\neg A$ , while  $U_H$  will play  $h$  and  $A$ . Also, Japan plays  $l$  if the U.S. plays  $l$  and  $h$  if the U.S. plays  $h$ . In the BPNE, Japan's belief will be consistent with Bayes' law:  $\mu \equiv p(U_L|l) = \frac{p(l|U_L)p(U_L)}{p(l|U_L)p(U_L)+p(l|U_H)p(U_H)} = \frac{1 \cdot p}{1 \cdot p + 0 \cdot (1-p)} = 1$ . This equilibrium results in either the most 'generous cooperation' outcome (when  $U_H$  and Japan both play  $h$  to offer a high contribution) or in dissolution of the alliance (when  $U_L$  and Japan both play  $l$  to offer a low contribution, and  $U_L$  rejects the proposal).

There will be also a pooling equilibrium when condition 1 is *not* satisfied (indicated as  $p \leq \frac{y_4 - \beta_J}{y_4 - y_2}$ ), such that either  $U_L$  and  $U_H$  play  $l$ . In this case, Japan will play  $h$  when the U.S. plays  $l$  (see Appendix for proof). In the BPNE, Japan's belief will also be consistent with Bayes' law:  $\mu \equiv p(U_L|l) = \frac{p(l|U_L)p(U_L)}{p(l|U_L)p(U_L)+p(l|U_H)p(U_H)} = \frac{1 \cdot p}{1 \cdot p + 1 \cdot (1-p)} = p$ . Given Japan's strategy,  $U_H$  will receive  $x_4$  by playing  $l$ . If  $U_H$  instead plays  $h$ , it will receive  $x_6$ . Given  $x_4 > x_6$ , it is optimal for  $U_H$  to play  $l$  and  $A$  when condition 1 is *not* satisfied. On the other hand, since Japan plays  $h$ ,  $U_L$  will receive  $x_2$  by playing  $l$  and  $A$ . Notice that this



equilibrium always results in ‘moderate cooperation’ where Japan always plays  $h$  but the U.S., either  $U_H$  and  $U_L$ , plays  $l$  and  $A$ . Under this condition, although the most credible alliance will not be formed, the security cooperation between the U.S. and Japan still will be maintained.

## **Comparative Statics Analysis and Hypotheses.**

First, notice that, while it may be counter-intuitive, the equilibria suggest that cooperation will emerge over a greater range of scenarios when China’s relative power is low. In the case of  $C_L$ , the result suggests that the alliance will always be maintained, even though the *level* of cooperation will depend on the U.S. type. On the other hand, the situation will be different when China’s relative power is high. The result demonstrates that the fate of the alliance will depend on the interest level of the U.S. as well as Japan’s perception of how much the U.S. willing to cooperate.

The separating equilibrium (Condition 1 being satisfied) illustrates that if the U.S. is not interested in the cooperation (when the U.S. is  $U_L$ ) and Japan also believes that, the alliance will be possibly terminated. Nevertheless, there will be a possibility to maintain a strong alliance as long as the U.S. is  $U_H$  and has a strong interest to cooperate, because it leads to a mutually-generous cooperation. Due to its defense vulnerability and a much weaker bargaining power, Japan will never abandon the alliance by playing  $l$  as long as it receives a signal from the U.S. willing to cooperate. Hence, when the Condition 1 is satisfied, which means that Japan believes the U.S. is more likely  $U_L$ , the nations will encounter a more extreme, unstable situation: they will either form the strongest alliance or terminate it depending on U.S. type.

On the other hand, the pooling equilibrium (Condition 1 not being satisfied, which means that Japan believes the U.S. is more likely  $U_H$ ) indicates that even though it will not be the most robust one, the alliance at least will be maintained as long as Japan *believes*

that the U.S. is interested in the cooperation, regardless of the actual U.S. type. Hence, the prospect of the alliance will be more stable. They will always maintain a moderate alliance, in which only Japan contributes a high amount and the U.S, either  $U_L$  and  $U_H$ , contributes low. Generally speaking, in either 'China low' and 'China high' case, the more interested the U.S. is in cooperation, the more likely the alliance will be formed and the more credible it will be. As I have argued, domestic political instability, including partisan extremism, should make the U.S. more indifferent to the security cooperation with Japan, and it will directly affect the continuation of the alliance. At the same time, the greater Japan's belief that the U.S. type is  $U_H$ , the more Japan chooses a generous contribution and the alliance will more likely get tenable. The analysis of Japan's perception illustrates the importance of diplomatic transparency and active political dialogues between the two nations in order to maintain a credible alliance. How my two variables, U.S. interest (type) and Chinese power impact the level of cooperation is illustrated in Figure3.

In addition to these analyses, we can also see more specific implications. The Japanese outside option ( $\beta_J$ ) will be a key. Notice, in Condition 1 ( $p \geq \frac{y_4 - \beta_J}{y_4 - y_2}$ ), the value of  $\frac{y_4 - \beta_J}{y_4 - y_2}$  gets smaller with a larger  $\beta_J$ , which makes it easier to satisfy the condition. This shows that Japan will more likely to play  $l$  when its outside option gets better, and it will cause a more unstable outlook to continue the alliance. The larger the Japanese outside option is, the greater the risk of the alliance breaking, especially under the situation that the U.S. does not demonstrate a strong interest in cooperation.

Those analyses suggest several implications for empirical testing:

***Implication 1:*** A weak China will make the security alliance between the U.S. and Japan more stable.

***Implication 2:*** As Chinese power increases, cooperation will become less consistent and even possibly disappears, especially when the U.S. interest in cooperation decreases.

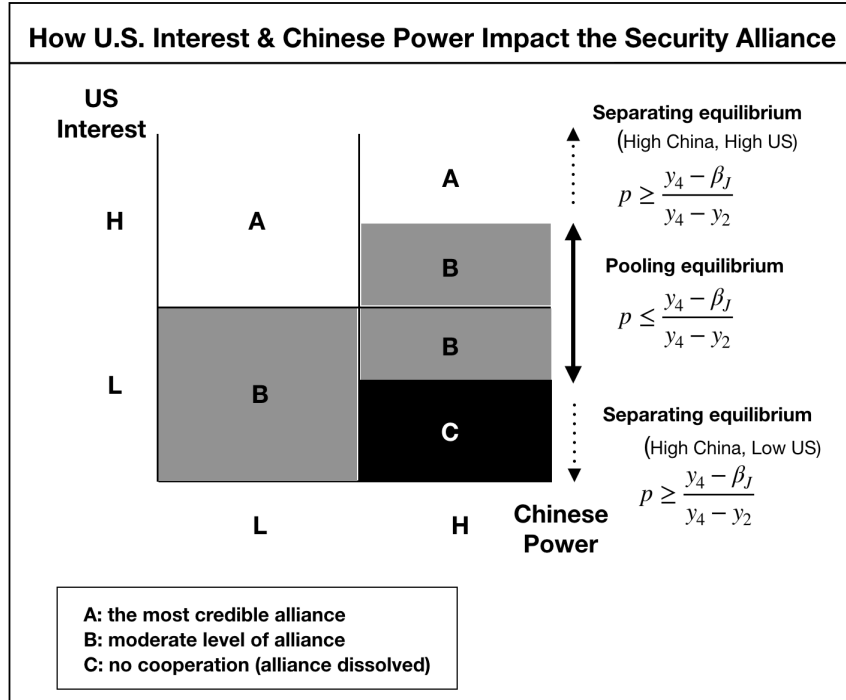


Figure 3: Illustration of the equilibrium outcome of the game. My key variables, Chinese power and U.S. interest (type) are placed on x and y axes, respectively. The relationship between them, either high or low, determines the equilibrium outcome. Area *A* represents the most generous alliance cooperation between the U.S. and Japan. The shaded area *B* represents the alliance with moderate credibility. Finally, area *C* represent no cooperation, which will result in dissolution of the alliance. As Condition 1 ( $p \geq \frac{y_4 - \beta_J}{y_4 - y_2}$ ) indicates, when  $p$  value gets larger, which means Japan is more likely to assume that U.S. type is low, the pooling equilibrium zone will get smaller, and the separating equilibrium possibilities will increase.

**Implication 3:** As the U.S. political climate becomes more extreme, either right or left; and thus the U.S. gets less interested in the security cooperation with Japan, the alliance will become less cooperative or even cease.

**Implication 4:** The alliance will never cease as long as Japan believes that the U.S. is interested in cooperation, regardless of the actual U.S. type.

**Implication 5:** As Japan’s outside option improves, the U.S.-Japan security alliance will potentially cease.

### *Discussion*

Notice that, in the model, I do not assume a relationship between the two variable, Chinese power and the U.S. interest, in maintaining the alliance with Japan. In reality, there may be a link. But the implications are non-obvious. Suppose, for example, that a more powerful China will increase the domestic demand for the U.S.-Japan security alliance. In this case, a strong China could increase the likelihood of the U.S. being  $U_H$  and facilitate a more credible security cooperation with Japan. Suppose, however, that we assume the opposite: a powerful China will increase the cost of maintaining the security alliance; and thus make the U.S. more indifferent to cooperate. In this case, a strong China may dramatically undermine the likelihood of cooperation between the U.S. and Japan.

Although I believe that this model successfully captures how these two variables interact and influence the optimal strategies of the U.S. and Japan, and it is the primary objective of this paper, I also acknowledge some limitations. First, I present the preference orderings of both the U.S. and Japan based on the assumption that the threat of China is higher in the  $C_H$  and lower in the  $C_L$  case than it currently is. However, we cannot help the perception being subjective. Furthermore, this model indicates that Japan does not know the U.S. type; however, in reality, Japan can predict whether the U.S. is  $U_L$  or  $U_H$  to some extent through diplomatic interactions and cheap talk. Nevertheless, information issues will be always there because the U.S. may not openly reveal its type in order to achieve some bargaining advantages and even has some incentives to pretend its type. Thus, Japan is never certain about the U.S. type. Considering the fact that Japanese politicians and the public are always anxious about how enthusiastic the U.S. is in the alliance, I believe this model captures the essence of information disparity between the two nations.

## Empirical Analysis

[This section is still a work in progress. I will conduct either a statistical analysis or case studies to support the equilibrium outcome of the game.]

## Conclusion

This paper's primary objective is to explore the outlook of the U.S.-Japan security alliance based on two independent variables, the U.S.' interest to cooperate and China's relative power. A strong U.S. interest to cooperate is a necessary condition for the continuation of an effective alliance. At the same time, even though it is not a sufficient condition for the alliance dissolution, a rising China negatively influences the security cooperation between the U.S. and Japan. There is no sufficient research on the U.S.-Japan security alliance that comprehensively investigates the interest and power of all involved nations. Therefore, I believe this research contributes not only to the studies of the U.S.-Japan alliance but also to the alliance literature in general.

Furthermore, by illustrating the significant role of the U.S.' interest for maintaining a credible alliance, this research also provides a concrete insight into how the current political polarization in the United States will influence global affairs. I believe there is a strong linkage between the U.S.' unstable political environment and declining hegemony, which also shape its foreign policy preferences. The alliance between the U.S. and Japan is one of the most long-lasting, credible security alliances, which has allowed the U.S. to expand and maintain its political influence in East Asia/Pacific Rim. Thus, we can even conclude that the U.S. abandoning this alliance represents the official end of U.S. hegemony.

This research also reveals under what conditions Japan may choose a nuclear policy, which is one of the central debates related to the alliance literature. Nuclearization seems Japan's only outside option; and therefore, it will be inevitable that Japan becomes nuclearized if the security alliance breaks down. And if it really happens, the security dynamic in the region will dramatically change. I believe the biggest contribution of this research is to explore the prospects of the U.S.-Japan security alliance by comprehensively analyzing the interest and power of all crucial nations. In order to thoroughly examine

the prospects of any alliances, we must investigate the players' strategic interactions as well as the influence of major exogenous factors.

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## Theoretical Appendix

In the  $C_H$  case, when the U.S. plays  $l$ , Japan will face an information set: it is optimal for Japan to choose  $l$  if the U.S. is  $U_L$ , while playing  $h$  is optimal if the U.S. is  $U_H$ . Thus, Japan will decide its move based on the value of  $p$ . If the U.S. is  $U_L$ , Japan will receive  $\beta_J$  by playing  $l$  and  $y_2$  by playing  $h$ . On the other hand, if the U.S. is  $U_H$ , Japan will receive  $\beta_J$  by playing  $l$  and  $y_4$  by playing  $h$ . Thus, it is optimal for Japan to play  $l$  if the condition below is satisfied, which will be condition 1.

$$p \times \beta_J + (1 - p) \times \beta_J \geq p \times y_2 + (1 - p) \times y_4 \longrightarrow p \geq \frac{y_4 - \beta_J}{y_4 - y_2}$$